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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,989	12/15/2003	Somenath Mitra	436/12	4147
27538 7590 04/07/2008 KAPLAN GILMAN GIBSON & DERNIER L.L.P. 900 ROUTE 9 NORTH WOODBIDGE, NJ 07095				
EXAMINER ROBINSON, DANIEL LEON				
ART UNIT		PAPER NUMBER		
3742				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/735,989

**Applicant(s)**

MITRA ET AL.

**Examiner**

DANIEL L. ROBINSON

**Art Unit**

3742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9, 14, 15 and 18-20 is/are pending in the application.
- 4a) Of the above claim(s) 14-15 and 18-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

***Response to Interview***

Claim Rejections - 35 USC § 102

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that  
(e) the invention was described in (1) an application for patent, published under  
section 122(b), by

another filed in the United States before the invention by the applicant for patent  
or (2) a patent

granted on an application for patent by another filed in the United States before  
the invention by the

applicant for patent, except that an international application filed under the treaty  
defined in section

351(a) shall have the effects for purposes of this subsection of an application filed  
in the United States

only if the international application designated the United States and was  
published under Article 21 (2)

of such treaty in the English language.

2. Claims 1-2 and 5 are rejected under 35 U.S.C. 102(e) as being clearly  
anticipated by Lin et al.(U.S.Pat.5,591,139).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set

forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Ferguson (2003/0209534).

Lin discloses substantially the claimed invention, but does not disclose quartz and borosilicate glass. Ferguson discloses resistive heating systems with a substrate

202 comprising quartz and borosilicate glass (page 10, [0068]). It would have been

obvious to one having ordinary skill in the art to modify Lin invention to include

the substrate comprising quartz and borosilicate glass as taught by Ferguson in order to

provide a more rigid structure for the microheater.

As for claim 9, it would have been obvious to include a glass-insulating layer disposed on the conductor 13 because it is conventional to insulate the heater-conductor to avoid short circuitry.

5. Claims 14-15 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Lin (5,855,801).

Lin discloses substantially the claimed invention, but does not disclose a method of fabricating including patterning and etching the substrate.

Lin discloses a method of fabricating a microstructure of a microheater comprising a

microchannel 78 formed on a silicon substrate-wafer 46 including patterning and etching

of the substrate 46 (col. 4, lines 21-67, col. 10, line 53-67) and etching of the substrate

46 with a boron-doped region 52 (col. 4, lines 6-67).

It would have been obvious to one having ordinary skill in the art to modify Lin invention to use a method of fabricating a microstructure including patterning and etching the substrate as taught by Lin as one of the conventional methods of fabricating

a microstructure of the microheater (col. 4, lines 40-45).

etching the substrate as taught by Lin as one of the conventional methods of fabricating

a microstructure of the microheater (col. 4, lines 40-45).

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Kenny (6,551,849).

Lin discloses substantially the claimed invention, but does not disclose the conductor comprising aluminum alloy and silicon.

Kenny discloses a method of fabricating arrays of microneedles-microchannels comprising electrically conductive pads 250 comprising aluminum, copper and polysilicon (col. 3, lines 15-25, col. 9, lines 15-25).

The limitation of the conductor comprising an aluminum alloy with 99% aluminum and silicon and copper, it is deemed that the material used for conductor would be chosen

by the user in order to assure a good conductivity. Therefore it would have been obvious to make the conductor of Lin out of 99% aluminum, silicon and copper as taught by Kenny in order to obtain the good conductivity of the microheater (col. 3, lines

15-25, col. 9, lines 15-25).

7. Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Lin in view of Yamazaki et al (6,165,876) and further in view Ueno et al (2002/00224662).

Lin discloses substantially the claimed invention, but does not disclose a substrate comprising a polished silicon wafer, and the conductor-heater comprising

boron ions. Yamazaki discloses a method of doping a silicon film 203 with boron ion

(col. 15, lines 1-18). Ueno discloses a microfluidic device having a heater 3 with a mirror-polished substrate (page 5, [0094]). It would have been obvious to one having

ordinary skill in the art to modify the Lin invention to include a doped substrate with

boron ions as taught by Yamazaki and a polished substrate as taught by Ueno and a

conductor comprising boron ions as taught by Yamazaki in order to improve crystallinity

of the film heater-microheater (Abstract)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL L. ROBINSON whose telephone number is (571)272-4788. The examiner can normally be reached on m-f 5:30-2:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu B Hoang can be reached on 571-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel L Robinson/  
Primary Examiner, Art Unit 3742

dlr